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## PREFACE

The scope of this paper is to discuss the financial management of a construction contractor. This paper attempts to approach this subject in a logical and systematic way. It communicates the importance of financial analysis and planning along with cash planning and profit planning. This report is not intended to be an all inclusive discussion of financial management in construction.

Contractor's Financial Management is an extremely important subject. It has been told that a large percentage of bankrupt contractors were profitable at the time of their failure, but due to their poor financial management failure resulted. Good financial management looks at past history of the company as well as planning for its future. Management needs to understand the basics of why they are making or losing money.

## CHAPTER I FINANCIAL ANALYSIS

### 1.1 FINANCIAL STATEMENTS

The financial statements are the basic measurements of a companies strengths and weaknesses. Poor financial management is the prime reason why contractor's fail. It is difficult to stay in business without keeping score. Financial statements, Income Statements, and Balance Sheets are the basis for keeping score of sales, profit and loss. The most successful companies execute financial statements on a monthly basis.

The Income Statement is the contractors primary financial management tool. Sometimes called the Profit and Loss statement, it shows the contractors profit and loss over a period of time. It is the key to understanding a companies operations. The Income statement is a summary of the Net Sales, Direct Costs of Sales, Operating Expenses, and Profit of the company. It should be performed on a monthly basis (2:1-4).

Terms used in an Income Statement:

1. Net Sales - The dollar volume of business transacted for the period.
2. Cost of Construction - The cost of all contracts or services sold during the period. These costs are directly related to a project.
3. Gross Profit - Net Sales minus Cost of Construction. This is the total income prior to the subtraction of Operating Expenses.
4. Operating Expenses - Total expenses for during business but not chargeable to Cost of Construction.
5. Variable Overhead - Operating Expenses that are a function of the amount of Cost of Construction.
6. Fixed Overhead - Operating Expenses that do not vary with Cost of Construction. It is necessary regardless of the amount of business.
7. Net Profit Before Tax - The difference of Gross Profit minus Total Overhead.
8. Net Profit - Income earned as profit after taxes.

# BALD EAGLE CONSTRUCTION

## INCOME STATEMENT

1993

1992

SALES	\$4,189,560	100.00%	\$6,651,400	100.00%
COST OF SALES				
MATERIAL	\$1,177,266	28.10%	\$1,130,738	17.00%
LABOR	\$1,483,104	35.40%	\$1,197,252	18.00%
SUBCONTRACTS	\$837,912	20.00%	\$3,192,672	48.00%
OTHER DIRECT COST	\$6,284	0.15%	\$109,748	1.65%
TOTAL DIRECT COST	\$3,504,567	83.65%	\$5,630,410	84.65%
GROSS PROFIT	\$684,993	16.35%	\$1,020,990	15.35%
GENERAL EXPENSES				
VARIABLE OVERHEAD				
DEPRECIATION	\$250,000	5.97%	\$250,000	3.76%
CONST. EQUIPMENT REPAIRS	\$62,843	1.50%	\$99,771	1.50%
INTEREST	\$4,190	0.10%	\$6,651	0.10%
LEGAL EXPENSES	\$3,142	0.08%	\$4,989	0.08%
BAD DEBT	\$3,771	0.09%	\$5,986	0.09%
WARRANTY COST	\$12,569	0.30%	\$19,954	0.30%
OFFICE SUPPLIES	\$1,676	0.04%	\$2,661	0.04%
COMMUNICATIONS	\$1,257	0.03%	\$1,995	0.03%
TOTAL VARIABLE OVERHEAD	\$339,447	8.10%	\$392,007	5.89%
FIXED OVERHEAD				
OFFICER,S SALARY	\$256,100	6.11%	\$256,100	3.85%
OFFICE STAFF	\$97,410	2.33%	\$97,410	1.46%
RENT	\$17,200	0.41%	\$17,200	0.26%
INSURANCE	\$53,500	1.28%	\$53,500	0.80%
ACCOUNTING	\$14,800	0.35%	\$14,800	0.22%
OFFICE UTILITIES	\$15,900	0.38%	\$15,900	0.24%
DUES	\$2,000	0.05%	\$2,000	0.03%
TOTAL FIXED OVERHEAD	\$456,910	10.91%	\$456,910	6.87%
TOTAL OVERHEAD	\$796,357	19.01%	\$848,917	12.76%
NET PROFIT BEFORE TAXES	(\$111,364)	-2.66%	\$172,073	2.59%
INCOME TAXES	\$0		\$55,063	
NET PROFIT AFTER TAXES	(\$111,364)		\$117,009	

The management of resources begin with the analysis of the Balance Sheet. The Balance Sheet is a statement of the company's financial position at a specific time. Assets are placed on the top while Liabilities and Net Worth are placed on the bottom of the sheet. The total of Assets must equal Liabilities plus Net Worth (2:1-7).

Terms used in a Balance Sheet

1. Assets - Something of value owned by the company
2. Current Assets - Assets that can be liquidated into cash within one year.
3. Fixed Assets - Assets that cannot be liquidated into cash in one year.
4. Total Assets - Current Assets plus Fixed Assets.
5. Liabilities - Amounts owed to others by the company.
6. Current Liabilities - Amount due within one year.
7. Long-Term Liabilities - Amount owed past a year.
8. Total Liabilities - Current Liabilities plus Long-Term Liabilities.
9. Net Worth - Total Assets minus Total Liabilities.

# BALD EAGLE CONSTRUCTION

## BALANCE SHEET

	1993	1992
<b>ASSETS</b>		
<b>CURRENT ASSETS</b>		
Cash	\$55,700	\$85,100
Accounts Receivable	\$908,023	\$515,700
Material Inventory	\$25,700	\$15,700
Notes Receivable	\$0	\$0
Cost in Excess of Billings and Estimated Earnings	\$0	\$25,100
Prepaid Expenses	\$32,000	\$23,600
Other Current Assets	\$10,200	\$7,000
Total Current Assets	\$1,031,623	\$672,200
<b>FIXED ASSETS</b>		
Total Fixed Assets	\$550,000	\$700,000
Less Accumulated Depreciation	\$250,000	\$250,000
Net Fixed Assets	\$300,000	\$450,000
<b>TOTAL ASSETS</b>	<b>\$1,331,623</b>	<b>\$1,122,200</b>
<b>LIABILITIES</b>		
<b>CURRENT LIABILITIES</b>		
Accounts Payable	\$871,487	\$505,200
Notes Payable	\$40,000	\$15,000
Billings and Estimated Earnings in excess of cost	\$42,500	\$45,900
Accrued Expenses	\$15,800	\$12,900
Other Current Liabilities	\$10,000	\$8,000
Total Current Liabilities	\$979,787	\$587,000
<b>LONG TERM LIABILITIES</b>		
Mortgages	\$190,000	\$202,000
Equipment Financing	\$25,000	\$85,000
Other Long Term Liabilities		\$0
Total Long Term Liabilities	\$215,000	\$287,000
<b>TOTAL LIABILITIES</b>	<b>\$1,194,787</b>	<b>\$874,000</b>
<b>NET WORTH</b>		
Capital Stock	\$100,000	\$100,000
Retained Earnings Jan. 1	\$148,200	\$231,191
Net Income for Year	(\$111,364)	\$117,009
Less Dividends	\$0	(\$200,000)
Total Retained Earnings	\$36,836	\$148,200
<b>TOTAL NET WORTH</b>	<b>\$136,836</b>	<b>\$248,200</b>
<b>TOTAL LIABILITIES AND NET WORTH</b>	<b>\$1,331,623</b>	<b>\$1,122,200</b>



## 1.2 OVERHEAD ANALYSIS

A company must properly identify and allocate their overhead costs. These costs must be identified and separated as fixed or variable costs.

Fixed costs are those costs essential to remain in business. They are not related to the volume of sales.

Variable costs are those costs which are related to the volume of sales. Variable costs rise with an increase in sales.

Proper allocation of overhead allows for accurate bidding, control during construction and as a contribution toward profits. In the construction industry, unlike the manufacturing industry, more than 50% of Costs of Sales are variable costs. Therefore increased profits can rarely be obtained by increases in by volume alone. Profits are made by increasing productivity and decreasing overhead (2:2-8).

EXAMPLE VARIABLE AND FIXED COSTS

Variable costs:

Advertising  
Auto  
Bad Debt  
Employee Benefits  
Entertainment  
Interest  
Office supplies  
Taxes  
Telephone  
Travel  
Warranties

Fixed Costs:

Contributions  
Depreciation  
Insurance  
Payroll Taxes  
Rent  
Repairs  
Salaries  
Utilities

### 1.3 FINANCIAL RATIOS

After the monthly financial statements are completed, a financial analysis by ratios can be performed. The contractor will need to use the Balance Sheet to calculate these ratios in determining the performance of the company.

#### 1.3.1 ACID TEST OR QUICK RATIO

$\text{Acid Test} = (\text{Cash} + \text{Accts Receivable}) / \text{Current Liabilities}$
---

This ratio measures the ability of a firm to cover its Current Liabilities by using its Cash and Accounts Receivable without converting Inventory or Other Current Assets to Cash. This ratio should be in the range of 1.0 - 1.5 to 1. An Acid Test Ratio less than 1.0 to 1 will not be able to meet current obligations as they become due without converting Inventory or Other Current Assets into Cash or financing through Long-Term Debt. An Acid Test Ratio greater than 1.5 to 1 indicates the company is overcapitalized and should consider investing the excess in other profit producing ventures or attempt to maximize cash turnover through an increased sales volume (2:4-3).

### 1.3.2 CURRENT RATIO

$$\text{Current Ratio} = \text{Current Assets} / \text{Current Liabilities}$$

This ratio is used to determine the number of times Current Liabilities can be paid by Current Assets. A range of 1.5 - 2.0 to 1 is recommended. A Current Ratio less than 1.5 to 1 the company may not be able to meet its current obligations. A Current Ratio higher than 2.0 to 1 the company has excellent financial strength but may be stagnant. It should use this excess of Current Assets in other profit generating investments.

### 1.3.3 CURRENT LIABILITIES TO NET WORTH

$$\text{Current Liabilities} / \text{Net Worth} = \text{Index of Debt}$$

This ratio compares what a company owns to what it owes. Any percentage over 80% indicates too much debt to creditors.

### 1.3.4 CURRENT ASSETS TO TOTAL ASSETS

$$\text{Current Assets} / \text{Total Assets} = \text{Index of Liquidity}$$

This ratio is used to measure the relative liquidity of a company. An acceptable range is from 0.60 - 0.80 to 1. A ratio less than 0.60 to 1 may indicate an excessively high investment in fixed assets. A ratio greater than 0.80 to 1 may indicate that the company has not invested heavily into fixed assets such as equipment and vehicles.

#### 1.3.5 WORKING CAPITAL

$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$
---

Working Capital is a measure of funds available for future operations.

#### 1.3.6 DEBT TO EQUITY RATIO

$\frac{\text{Total Liabilities}}{\text{Total Net Worth}} = \text{Degree of investment}$
---

This ratio indicates creditors investments to owners investments. The ideal range is 1.0 - 2.0 to 1. If the ratio is less than 1.0 to 1, it suggests a strong equity position for the company but lacking in debt financing to its advantage. A ratio greater than 2.0 to 1 shows that

creditors have more than twice the amount invested in the company as do the owners. This may be excessive.

#### 1.3.7 DEGREE OF FIXED ASSETS NEWNESS

Degree of Fixed Assets =	$\frac{\text{Net Depreciable Fixed Assets}}{\text{Total Depreciable Fixed Assets}}$
Newness	

This ratio measures the proportion of the original cost of Fixed Assets which have not been depreciated. The desirable range for this ratio is 40% to 60%. If the ratio is less than 40% than the company is probably using an old equipment fleet. A ratio greater than 60% may suggests the company is young or the equipment has been recently updated to improve productivity or to take on new business.

## CHAPTER II CASH PLANNING

Projecting cash flow is an important aspect of contractor financial management. A cash flow forecast is a projection of the cash receipts and cash payments for a future period of time. A companies cash supply is determined by its profitability and efficiency. Failure to have an adequate cash flow has resulted in the bankruptcy of many otherwise profitable companies. To ensure the company has a proper cash flow, a cash analysis must first be preformed (3:101).

### 2.1 CASH ANALYSIS

This analysis is done by computing the following (2:5-2):

- Cash Conversion Period
- Accounts Payable Period
- Cash Demand Period
- Working Capital

### 2.1.1 CASH CONVERSION PERIOD

The Cash Conversion Period is the average time the companies cash moves through the cash cycle back to the company. This time consists of the summation of the following:

- Average Age of Accounts Receivable
- Average Age of Retainage
- Average Age of Inventory
- Average Age of Work in Progress

The average Cash Conversion Period should not exceed 75 days. If it does exceed this amount of time than the company is probably doing a poor job in its collections which results in an excessive amount of borrowing.

#### 2.1.1a AVERAGE AGE OF ACCOUNTS RECEIVABLE

The Average Age of Accounts Receivable is the time it takes from billing to receipt of payment. The Net Sales will come from the company Income Statement and the Average Accounts Receivable from the Balance Sheet.

Average Age of	=	<u>Average Accounts Receivable</u>	X 365
Accounts Receivable		Net Sales	

An age over 45 days shows a serious problem with the companies collections.



#### 2.1.1b AVERAGE AGE OF RETAINAGE

The monthly Income Statement and Balance Sheet is also used for this equation. The Average Age of Retainage is the average length of time the cash is tied up in owner's retainage.

$$\text{Average Age of Retainage} = \frac{\text{Average Retainage}}{\text{Net Sales}} \times 365$$

The average age should not be more than the contract allows.

#### 2.1.1c AVERAGE AGE OF INVENTORY

This is the length of time that cash is tied up in inventory. This calculation is made by using the monthly average material inventory from the Balance Sheet and the materials cost from the Income Statement.

$$\text{Average Age of Materials} = \frac{\text{Average Materials Inventory}}{\text{Average Materials Cost}} \times 365$$

This age should not be more than 30 days. If it exceeds 30 days than the company may have too much cash invested in inventory.

#### 2.1.1d AVERAGE AGE OF WORK IN PROGRESS

The Average Age of Work in Progress is the time that cash is tied up in unbilled work.

Average Age of =	$\frac{\text{Costs and Estimated Earnings in Excess of Billings} \times 365}{\text{Net Sales}}$
Work in Progress	

This amount of time represents work in the ground that has not been billed for on the last progress payment. The company should do its utmost to keep this to a minimal.

#### 2.1.2 ACCOUNTS PAYABLE PERIOD

This is the length of time the company takes to pay its bills. It is the time from billing to payment. This time consists of the summation of the following:

- Average Age of Accounts Payable
- Average Age of Billings in Excess of Costs and Estimated Earnings

#### 2.1.2a AVERAGE AGE OF ACCOUNTS PAYABLE

This is the average length of time the company takes to pay bills. Materials and Subcontracts costs are taken from the monthly Income Statement.

Average Age of Accounts Payable	=	<u>Average Accounts Payable</u>	X	365
		Materials + Subcontracts		

The industry norm is considered 45 days. More than 45 days will prevent the company from taking advantage of cash discounts and may harm its credit rating.

#### 2.1.2b AVERAGE AGE OF BILLINGS IN EXCESS OF COSTS AND ESTIMATED EARNINGS

This shows the average time for which billings have been made, but which the costs are less than the billings made.

Average Age of Billings in Excess of Costs and Earnings	=	<u>Average Billings in Excess of Costs</u>	X	365
		Net Sales		

The Average Age of Billing in Excess of Costs and Earnings should be zero. The average of 5 days is sometimes accepted as the upper limit. Anything more represents payment for a weeks work that must be completed in the future.

### 2.1.3 CASH DEMAND PERIOD

The Cash Demand Period is the average number of days that the company will need funds to meet current obligations.

$\begin{array}{r} \text{Cash Conversion Period} \\ - \text{Accounts Payable Period} \\ \hline \text{Cash Demand Period} \end{array}$
--

As shown in section 2.1.2, the Accounts Payable Period is the summation of Average Age of Billings in Excess of Costs and Average Age of Accounts Payable. This Cash Demand Period will vary depending on the effectiveness of collecting Accounts Receivable and inventory management as explained in section 2.1.1. The industry average is 30 days. The most successful companies have a short Cash Conversion Period as well as a short Accounts Payable Period.

#### 2.1.4 WORKING CAPITAL

Working Capital is the difference of Current Liabilities from Current Assets and represents the contractor's capital resources to generate new business. Working Capital ratios indicate the company's general financial health regarding cash and its use.

#### 2.1.4a WORKING CAPITAL TURNOVER

This ratio indicates the degree to which Working Capital is used versus credit.

$\text{Working Capital Turnover} = \frac{\text{Net Sales}}{\text{Working Capital}}$
---

If this ratio is too high then the company owes too much or is doing too much work, resulting in credit being substituted for adequate use of Working Capital Turnover. If the ratio is too low then borrowing is rarely used. Most profitable contractors have a Working Capital Turnover between 8 and 12 times per year.

#### 2.1.4b RETURN ON WORKING CAPITAL

The Return on Working Capital is a percentage that measures the company's freedom to do business. This ratio is important because capital is usually provided by borrowing or through sales volume. If a change occurs the company may be unable to borrow, conduct daily operations, or required to change its prices.

$$\text{Return on Working Capital} = \frac{\text{Net Profit}}{\text{Working Capital}}$$

The suggested range for Return on Working Capital is between 40 to 60 percent.

#### 2.1.4c OWNER'S INVESTMENT TO CREDITOR'S INTEREST

This ratio is another index of a contractors liquidity. It measures the owner's investment to the creditor's interest.

$$\text{Owner's Investment to} = \frac{\text{Working Capital}}{\text{Creditor's Interest Current Liabilities}}$$

This ratio should be 0.80 - 1.0 to 1. If the

ratio is less than 0.80 the company may have a problem with liquidity. Greater than 1.0, the company may be overcapitalized and should consider investing the excess in other profit producing ventures or attempt to maximize cash turnover through an increased sales volume.

#### 2.1.4d WORKING CAPITAL TO FUNDED DEBT

This ratio indicates the degree of debt, the ability to pay and the dependency on borrowing.

$\text{Index of Meeting Obligations} = \frac{\text{Working Capital}}{\text{Funded Debt}}$
---

The acceptable percentage is a matter of judgement. In bad economic times a lower percentage is utilized while in good times a higher percentage is used. This ratio should approximate the Acid Test Ratio.

## 2.2 PROJECT BUDGET AND CASH FLOW

As shown in the previous section, Cash Analysis provides much planning information. However, it does not provide for long term cash needs. This long term need is provided by proper Cash Flow Planning. But before Cash Flow can be projected, a Budget projection must be performed.

### 2.2.1 BUDGET PROJECTION

A projects budget provides a monthly snapshot of all cash outlays and income. It is a numerical plan of operations and a predictor of the company's performance. It also identifies the anticipated sales, costs and profits of the company. The operating budget provides three primary benefits (1:93):

- It identifies the relationship between sales, costs, and profit that a company anticipates during a period of operation.
- It provides a numerical basis by which alternative business decisions can be measured before they are made.
- The operating budget helps control overhead.



The following are basic steps to developing a budget (1:99):

- Establish the desired Rate of Return on Investment, and define the dollar amount of Net Profit needed to achieve that Rate of Return.
- Estimate all costs, Fixed and Variable.
- Add the necessary Net Profit to your estimate for Fixed Overhead to determine the amount of dollars which must remain after all Variable Costs are paid.
- Divide Net Profit plus Fixed Overhead by the Marginal Ratio to identify the necessary level of Sales.  
  
Marginal Ratio =  $100\% - (\text{Total Direct and Variable Costs as a \% of Sales})$
- If the results are reasonable, complete the budget. If not then redefine your Return on Investment objective or reestimate costs for the sales volume indicated, then proceed through the steps again.

Successful companies prepare monthly budgets as well as annual budgets. Once the budget is complete, adopt it and work towards accomplishing it. Remember, no matter how good your budget is, it is of little value unless you use it to evaluate your month to month performance in an effort to

make your actual Income Statement meet the forecasted results. Everyday the company should use this budget in its operational decisions. By using budget information, companies are able to improve their decision making abilities and enhance its profits.

**EXAMPLE BUDGET FORMAT**

	<b>Amount</b>	<b>% of Sales</b>
<b>NET SALES</b>	<b>\$</b>	
<b>COST OF SALES:</b>		
Materials	_____	_____
Labor	_____	_____
Subcontracts	_____	_____
Other Direct Costs	_____	_____
Total Direct Costs	_____	_____
<b>OPERATING EXPENSES:</b>		
<b>VARIABLE OVERHEAD</b>		
Advertising	_____	_____
Auto and Truck Expense	_____	_____
Bad Debts	_____	_____
Communication	_____	_____
Interest	_____	_____
Miscellaneous	_____	_____
Office Supplies	_____	_____
Taxes	_____	_____
Travel and Entertainment	_____	_____
Unapplied Labor (Includes Payroll	_____	_____
Taxes and Union Fringes)	_____	_____
Warranty Costs	_____	_____
Total Variable Overhead	_____	_____
<b>FIXED OVERHEAD</b>		
Contributions	_____	_____
Depreciation	_____	_____
Dues and Subscriptions	_____	_____
Insurance	_____	_____
Legal and Audit	_____	_____
Payroll Taxes (Office Only)	_____	_____
Rent	_____	_____
Repairs and Maintenance	_____	_____
Salaries - Officers	_____	_____
Salaries - Office	_____	_____
Salaries - Engr., Est., Sales	_____	_____
Salaries - supervision	_____	_____
Shop Supplies and Tools	_____	_____
Utilities	_____	_____
Total Fixed Overhead	_____	_____
<b>TOTAL OVERHEAD</b>	_____	_____
<b>NET PROFIT BEFORE INCOME TAX</b>	=====	=====

### 2.2.2 CASH FLOW

Now that a budget has been done, a Cash Flow can be preformed. A Cash Flow is a projection of the cash receipts and cash payments for a future period of time. Without this projection a company can easily get behind in paying their subcontractors and suppliers due to late payment from the owner or the improper allocation of payment monies received by the contractor. Lack of adequate capital or operating reserves can also contribute to the contractor's inability to pay subcontractors and suppliers (3:101).

Good construction financial management should result in a positive Cash Flow which allows the contractor to avoid or minimize borrowing. A positive Cash Flow also allows the contractor to take advantage of supplier discounts for early payment.

# ANNUAL BUDGET AND CASHFLOW PROJECTION FOR 1994

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
BUDGET	4.50%	4.60%	4.50%	9.60%	10.00%	11.40%	13.80%	12.90%	10.00%	8.90%	5.80%	4.00%	100.00%
SALES	\$314,678	\$321,671	\$454,535	\$671,314	\$689,265	\$797,185	\$965,013	\$902,078	\$689,285	\$482,507	\$405,585	\$279,714	\$8,982,850
COST OF SALES													
MATERIAL	\$88,425	\$90,390	\$127,724	\$188,639	\$198,489	\$224,009	\$271,169	\$253,484	\$198,489	\$135,584	\$113,989	\$78,600	\$1,964,991
LABOR	\$111,398	\$113,872	\$160,905	\$237,645	\$247,547	\$282,203	\$341,615	\$319,335	\$247,547	\$170,807	\$143,577	\$99,019	\$2,475,489
SUBCONTRACTS	\$62,938	\$64,334	\$90,907	\$134,283	\$139,857	\$159,437	\$183,003	\$180,416	\$139,857	\$98,501	\$81,117	\$55,943	\$1,398,570
OTHER DIR COST	\$472	\$483	\$882	\$1,007	\$1,049	\$1,198	\$1,448	\$1,353	\$1,049	\$724	\$808	\$420	\$10,489
TOTAL DIR COST	\$283,228	\$269,078	\$380,218	\$561,554	\$587,954	\$666,845	\$807,234	\$754,588	\$584,952	\$403,617	\$339,272	\$233,981	\$5,849,519
GROSS PROFIT	\$51,450	\$52,593	\$74,317	\$109,760	\$111,333	\$130,340	\$157,780	\$147,490	\$114,333	\$78,890	\$68,313	\$45,733	\$1,143,331
LESS: VAR OH	\$25,489	\$26,055	\$38,817	\$54,378	\$58,642	\$64,572	\$78,166	\$73,068	\$56,642	\$39,083	\$32,852	\$22,657	\$566,421
FIX OH	\$18,981	\$17,338	\$24,499	\$38,183	\$37,891	\$42,988	\$52,014	\$48,621	\$37,891	\$28,007	\$21,861	\$15,076	\$378,910
NET PROFIT BEFORE TAXES	\$9,000	\$9,200	\$13,000	\$19,200	\$20,000	\$22,800	\$27,600	\$25,800	\$20,000	\$13,800	\$11,800	\$8,000	\$200,000

## CASH FLOW PROJECTION

BEGINNING CASH BAL	\$55,700	\$13,942	\$13,709	\$8,447	\$11,948	\$50,332	\$11,651	\$14,684	\$16,003	\$37,578	\$50,363	\$65,675	\$348,062
PLUS COLLECTIONS	\$908,023	\$240,000	\$314,678	\$321,671	\$454,535	\$671,314	\$689,265	\$797,185	\$965,013	\$902,078	\$989,285	\$482,507	\$7,455,574
AVAILABLE CASH	\$963,723	\$253,942	\$328,387	\$328,118	\$466,483	\$721,646	\$770,936	\$811,869	\$981,016	\$939,656	\$749,678	\$548,182	\$7,803,638

## LESS DISBURSEMENTS:

DIRECT LABOR	\$111,398	\$113,872	\$169,905	\$237,645	\$247,547	\$282,203	\$341,615	\$319,335	\$247,547	\$170,807	\$143,577	\$99,019	\$2,484,468
ACCTS PAY GEN	\$591,487	\$68,897	\$90,873	\$128,406	\$189,648	\$197,548	\$225,205	\$272,617	\$254,837	\$197,548	\$136,308	\$114,577	\$2,487,949
ACCTS PAY SUBS	\$280,000	\$50,000	\$82,936	\$64,334	\$90,907	\$134,283	\$139,857	\$159,437	\$183,003	\$180,416	\$139,857	\$96,501	\$1,591,511
VAR OH	\$25,489	\$26,055	\$38,817	\$54,378	\$58,642	\$64,572	\$78,166	\$73,068	\$56,642	\$39,083	\$32,852	\$22,657	\$566,419
FIX OH	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$31,409	\$378,910
INDICATED BAL	(\$76,068)	(\$56,281)	(\$83,553)	(\$188,052)	(\$148,866)	\$11,651	(\$105,316)	(\$43,997)	\$197,578	\$320,363	\$265,675	\$184,019	\$288,379

## REQUIRED LOANS

LOAN PAY BACK	\$80,000	\$70,000	\$70,000	\$200,000	\$200,000		\$120,000	\$60,000	\$160,000	\$270,000	\$200,000	\$180,000	\$810,000
ENDING CASH BAL	\$13,942	\$13,709	\$8,447	\$11,948	\$50,332	\$11,651	\$14,684	\$16,003	\$37,578	\$50,363	\$65,675	\$45,733	\$288,379

### 2.3 COMPANY CASH FLOW

The Company Cash Flow is the combination of cash flows from all current and expected projects and all operating expenses. The Company Cash Flow Budget is prepared for 12 months in advance and revised monthly. It will show the flow of cash into and out of the company. Excessive amounts of cash into the company means cash is not working and not yielding a Return on Investment. While a lack of cash means creditor problems, excessive borrowing, and failure to pay bills and loans on time (2:7-2).

From the Company Cash Flow we can develop the projected Income Statement and Balance Sheet. Once these are projected the company can analyze their Financial Ratios, borrowing requirements, and expected Profit.

### 2.4 CASH FLOW STRATEGY

The company must plan for the short and long term management of the company's cash. Borrowing is not always the answer because it is expensive. Cash Flow Strategy is concerned with increasing liquidity. They deal with early payment of cash to the company, cash reserve investment, and delayed payment of obligations (2:8-2).

#### 2.4.1 EARLY PAYMENT

- Unbalanced Bids - The objective is to accelerate payment at the early stages of construction. Unbalanced bid items include salaries, mobilization, materials purchases, equipment leasing, and initial earth or foundation work. This can also be used in unit price contracting by high pricing of early construction items and high pricing of items expected to increase in quantity. Remember large early payouts mean lower payments as the work progresses. This may result in the need for borrowing when cash income decreases.

- Progress Payments - Ensure the owner does not delay Progress Payments. Delay of payment forces the contractor to borrow and to include interest in his bid. Methods to reduce the time of payment include:

- 1) Come to agreement that the owner pays within a certain amount of time from receipt of request for payment.
- 2) Agree to the amount of retainage and when it will be paid.
- 3) Set your bank account for the project at the owner's bank so progress payments are made more quickly.

- 4) Submit bills on time or more frequently.
- 5) Pass all bills directly to the owner or bank for payment.
- 6) Increase work in place to accelerate payment, lower cash flow requirements, and accelerate retainage payment.

#### 2.4.2 CASH RESERVE INVESTMENT

Investing Cash Reserves is also an effective method of increasing Cash Flow. These include Discounts and Short Term Investments.

- Discounts - These are based on early payment and represent a reduction in accounts payable. The current rate of interest is the determining factor in taking a Discount. Discounts less than the annual borrowing rate should not be taken. If the discount is more than the current cost of money then take the discount.



- Short Term Investment - Excess cash should be deposited in interest producing accounts such as:

U.S. Treasury bills  
Lending securities  
Certificates of deposit  
Commercial paper  
Money market funds

Excess cash should never be left idle in noninterest accounts. Additionally, cash should be readily available for fluctuating demands on cash.

#### 2.4.3 DELAY PAYMENT

Delaying Payments are another method of increasing Cash Flow. This can be done by:

- Delaying payment of bills - This very popular but could result in reduced credit from suppliers, bad credit rating, lost discounts, and bad relations.
- Buy materials when they are needed thus reducing inventory.
- Include retention in subcontractor agreements including payment when the Company's progress payments are met.

## CHAPTER III PROFIT PLANNING

The profitability of a company is a driving factor for investors and lending institutions. Profits are used as a gauge in comparing year to year performance as well as comparison to competing companies. This chapter explains how to analyze and increase profits.

### 3.1 PROFIT PLANNING

We plan for profit to maximize them. There are three ways to increase profits: Increase volume, Increase gross margin, and Control of overhead.

#### 3.1.1 INCREASE VOLUME

Increasing Sales is not the most effective method to increase profits, however it is the most often used. A company can increase sales by (2:9-3):

- Lower bid pricing
- Increased bidding
- Increased marketing
- Diversification

This method is effective only if Overhead costs and Gross Profit Margins are controlled.

### 3.1.2 INCREASE GROSS MARGIN

Gross Profit Margin is the ratio of Gross Profits to Sales. Checking Profit Margins from the Income Statement is an excellent way for companies to oversee their goal of meeting profits (2:9-6).

$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}}$
---

Gross Margin is increased by:

- Reducing Variable Costs - Variable costs account for over 50% of Gross Costs. Reducing this cost is the most effective means to increase net profits.
- Improvements in Productivity - This is the most effective way to increase gross profits. This is done by controlling labor and material costs.
- Negotiate Contracts - Competitive bidding reduces Profit Margins. Negotiated work allows for better pricing and profit margins.

### 3.1.3 CONTROL OVERHEAD

Overhead must be classified as either fixed or variable. In reducing overhead, Fixed overhead may not be reducible unlike Variable overhead. Overhead is controlled by comparing overhead costs as a percentage to other costs. This is done by the following overhead ratios:

- Total Overhead / Net Sales
- Total Overhead / Total Direct Costs
- Total Overhead / Labor Costs
- Total Overhead / Material Costs

Income statements should show the percentage of overhead per category. They should be reviewed monthly. The lower the percentage of overhead the higher the profits.

### 3.2 PROFIT CENTER ANALYSIS

Profit Center Analysis is concerned with looking at each project or similar types of projects in their contribution to the company's total sales. It helps to determine which projects are profitable and which are not. By knowing this the company is better able to do short and long term planning.

Profit Center Analysis analyzes the contribution to profit and overhead by the individual project or profit

centers. Profit Center Analysis is dependent on the accuracy with which the various components of the Income Statement are allocated or distributed to the various profit centers.

When Net Sales and Direct Costs are distributed to the various profit centers, Gross Profit is determined for each of the centers. Now Operating Expenses of the total company must be distributed as equitably as possible to each of the profit centers (1:178).

Only after this can one determine whether a particular type of work or project is profitable. Operating Expenses are distributed to the various profit centers by the following:

- Percentage of Sales
- Percentage of Labor
- Percentage of Material
- Management Judgement

**EXAMPLE COMPANY BUDGET**

	<u>Total Company</u>	<u>Proj A</u>	<u>Proj B</u>	<u>Proj C</u>
Net Sales	\$1,118,000	325,000	520,000	273,000
Cost of Sales				
Materials	479,570	169,520	224,700	85,350
Labor	274,890	60,580	123,525	90,785
Subcontracts	29,345	11,245	18,100	----
Other direct Costs	<u>10,818</u>	<u>3,803</u>	<u>4,575</u>	<u>2,440</u>
Total Cost of Sales	<u>794,623</u>	<u>245,148</u>	<u>370,900</u>	<u>178,575</u>
Gross Profit	323,377	79,852	149,100	94,425
Overhead Expenses				
Variable Overhead	65,057	18,297	28,814	17,946
Fixed Overhead	<u>173,600</u>	<u>33,157</u>	<u>93,925</u>	<u>46,518</u>
Total Overhead	238,657	51,454	122,739	64,464
Net Profit before Taxes	\$ <u>84,720</u>	<u>28,398</u>	<u>26,361</u>	<u>29,961</u>
Net Profit to Sales	7.57%	8.74%	5.07%	10.98%

### 3.3 Breakeven Analysis

A Breakeven Analysis determines the breakeven point in sales, sales required for a given profit and the effects price and cost changes has on profits.

#### 3.1.1 BREAKEVEN POINT

The breakeven point is very important because it is where profit begins. At the breakeven point:

$$\text{Profit} = 0$$

$$\text{Net Sales} = \text{Variable Costs} + \text{Fixed cost}$$

The Breakeven point is calculated as:

$$\text{Breakeven Point} = \text{Fixed Costs} / \text{Marginal Ratio}$$

$$\text{Marginal Ratio} = 100\% - \text{Variable Cost as a \% of Sales}$$

Breakeven Analysis shows where Net Sales equals Overhead. Every manager should know their breakeven point for the company and its projects. With the above equation, the Breakeven sales volume can be calculated for a desired Marginal Ratio and known Overhead Costs.

### 3.3.2 PROFIT AS A PERCENT OF SALES

$$\text{Sales} = \text{Fixed Overhead} / (\text{Marginal Ratio} - \text{Profit})\%$$

This equation enables you to find the sales volume needed to generate a certain dollar amount of profit.

### 3.3.3 PRICE CHANGES

To increase Profit, Net Sales must increase. This can be done by increasing the volume of sales or increasing sale prices. Increasing sales volume increases Variable Costs. Increasing sale prices is much more effective in realizing your profit goals because the volume of work remains unchanged as do variable costs.

### 3.3.4 FIXED COSTS AND PROFITS

Increases in Fixed Costs have a dramatic effect upon Net Profit. As Fixed Costs increase and the Marginal Ratio remains the same, the Breakeven Point increases and Profits decrease. The Breakeven Point increases by a multiple of the increase in fixed costs. This multiple is the inverse of the Marginal Ratio (1:169).



#### 3.3.5 VARIABLE COSTS AND PROFITS

Changes in Variable Costs have a greater effect on the Breakeven Point and Profits than does a change in sales volume. An increase in Variable Costs without an increase in Net Sales reduces your Margin Ratio. This results in reduced profits and a greater Breakeven Point. The opposite is true of reducing your Variable Costs.

## CHAPTER IV FINANCIAL PLANNING

Companies that plan for the future consistently do well financially. Making good investment decisions and financing for growth are two requirements for Financial Planning.

### 4.1 INVESTMENT DECISIONS

Investment decisions are broken down into long-range and short-range decisions.

#### 4.1.1 LONG RANGE DECISIONS

This depends on three decision making factors. They are Return on Investment, Degree of Risk, and Payback.

##### 4.1.1a RETURN ON INVESTMENT

This measures the return the investment will yield in addition to returning the original expenditure.

$$\text{Return on Investment} = \text{Net Profit before Taxes} / \text{Net Investment}$$

Return on Investment is used to analyze projects having similar economic lives and whose patterns of Net Investment are very similar.

#### 4.1.1b DEGREE OF RISK

Risk is difficult to measure. It requires a subjective valuation. You can expect greater returns as more risk is taken on (1:135).

#### 4.1.1c PAYBACK

The time required to recover the original investment. When considering similar types of investments, chose the one with the shortest payback period. The shorter one uses the least amount of Working Capital for the shortest period of time. This frees up Working Capital for other investments.

#### 4.1.2 SHORT RANGE DECISIONS

Company annual budgets are used for short-ranged decisions. Once the budget is completed along with the profit objectives, ways must be found to meet these goals. These goals are met by bidding on upcoming projects. The criteria in selecting these projects are similar to those used in Long-Range Decision making.

## 4.2 FINANCING FOR GROWTH

Many companies fail because they lack the capital to meet current obligations. Of these failed businesses, a good percentage were profitable at the time of failure. The major reasons for failure in the construction industry is poor management and the inability to obtain adequate financing. A company can overcome these deficiencies (1:145).

### 4.2.1 ESTABLISHING A LINE OF CREDIT

This is an agreement in which the lender declares its intent to extend a certain amount of money to a company. It is a commitment by the lender to make a loan when required by the company. This requires planning to determine its Line of Credit needs. The annual budget is the plan used to determine this need. Make every effort possible to receive the most favorable agreement. This includes favorable interest terms and also the conditions of the agreement.

### 4.2.2 SELECTING YOUR BANKER

Find a bank that can service all your needs. This means one that is able to handle your maximum requirements.

You should also know the lending policies of the bank.  
Choose a bank that understands the construction business.  
And finally consider the safety of the bank.

#### 4.2.3 PRESENTING THE COMPANY IN ITS BEST LIGHT

When establishing a Line of Credit present yourself in a professional manner. Present the facts and provide the information required by the banker in a timely manner. This information most likely includes:

- History of the company
- Organization structure
- Company's management information system
- Financial history
- Current year's operation
- Work in progress
- List of references

#### 4.2.4 WHAT THE BANKER WANTS TO KNOW

The banker may ask questions about how you do business and the internal workings of the company. They may ask questions such as:

- Is backup management sufficient?
- How will the money borrowed be used?
- When will you repay and where will the funds come from?
- What are your sales and profit trends?

These are a few of the potential questions. The banker is most interested in your financial standing. The results of the analysis performed on your Financial Statements will have a major impact in the banks decision. This analysis will include:

- Current Ratio
- Acid Test Ratio
- Working Capital
- Working Capital Turnover
- Net Profit divided by Net Sales
- Net Profit divided by Working Capital
- Debt to Equity Ratio
- Average Age of Accounts Receivable
- Cash Conversion Period
- Cash Demand Period

#### 4.2.5 MAINTAINING YOUR LINE OF CREDIT

Once your Line of Credit is established do the utmost to maintain the relationship with your banker. The bank will hold its part of the agreement and so must you. Make good on all commitments and never exceed the Line of Credit. Exceeding your Line of Credit shows poor management and may result in the cancellation of the agreement. You should also periodically review your Line of Credit needs. This shows the banker that you are managing your business.

You must also maintain or increase profits less your Line of Credit be reduced or cancelled. In addition, avoid

decreases in liquidity and new loans without your bankers approval. These may seriously effect your ability to repay the loan and may result in reduction or cancellation of your Letter of Credit (1:153).

## CHAPTER V APPLICATIONS

I have selected two well known companies to apply the information in this report. One company, Morrison Knudson is a highly diversified international construction company. While Ryland is the nation's third largest homebuilder and a leading mortgage-finance company.

The application of the information in this report would be ideal for a small construction company. Unfortunately, I was unable to access the finances of any local contractor. This information is difficult to obtain and any interest in it is subject to suspicion by the contractor.



### 5.1 The Ryland Group Inc.

Business: Ryland is a leading national homebuilder and a mortgage-related financial services firm. Established in 1967, the company currently builds homes and provides mortgage services in 18 states. The company was the third largest single-family on-site homebuilder in the United States in 1993 based upon homes delivered. The company's homebuilding segment specializes in the sale and construction of single-family attached and detached housing and condominiums. The financial services segment provides mortgage-related products and services for retail and institutional customers and conducts investment activities. The company facilitates the issuance of mortgage-backed securities and mortgage-participation securities through its limited-purpose subsidiaries.

### Financial Analysis

Because of Ryland's diversification, an acceptable limit on the ratios was not found. However, looking year to year we are able to analyze general trends.

#### LIQUIDITY RATIOS

Test/Year	1991	1992	1993
Acid Test	0.04	0.05	0.37
Current Ratio	4.31	2.30	4.88
Debt/Equity ratio		8.48	6.90
Current Liab/Net Worth	39%	75%	40%

- a) The acid test shows the number of dollars of liquid assets available to cover each dollar of current debt. Anytime this ratio is as much as 1 to 1 the business is said to be in a liquid condition. The larger the ratio the greater the liquidity. As shown above, Ryland in 1991 and 1992 had virtually no liquidity. In 1993, liquidity improved to .37 and should increase with greater home sales.
- b) The current ratio measures the degree to which current

assets cover current liabilities. The higher the ratio the more assurance exists that the retirement of current liabilities can be made. As shown, Ryland's current ratio is very high. This is due in part to its large inventory it carries.

c) Debt to equity ratio shows as of 1993 creditors funding is nearly 7 times that of the owners equity. This may be excessive, especially if the company is burdened with substantial interest charges.

d) The current liabilities to net worth ratio shows a decrease to 40% in 1993. This appears to be a reasonable percentage. The smaller the net worth and the larger the liabilities, the less security for the creditors.

Conclusion: It is obvious from the above ratios that Ryland is illiquid and is carrying a large inventory. Increasing home sales and using inventory should have a significant impact on improving Ryland's liquidity.

## Cash Analysis

### EFFICIENCY RATIOS

Test/Yr	1991	1992	1993
Avg age of Accts Receivable	0 days	0 days	0 days
Sales to Inventory	2.43	2.22	2.46
Accounts Payable to Sales	7%	5%	5%

- a) The company's average age of receivables is insignificant. This is due to selling and financing of the homes by Ryland.
- b) The sales to inventory ratio is a guide to the rapidity at which inventory is being moved and the effect on the flow of funds into the business. As shown, the ratio is relatively small indicating the company has a very high inventory or slower moving inventory.
- c) Accounts payable to sales measures how the company is paying its suppliers in relation to the volume being transacted. An increasing percentage or one larger than the industry norm, indicates the firm may be using suppliers to help finance operations. As shown Ryland has improved in this area bringing the ratio down to 5%.

Conclusion: Ryland's inventory appears excessive. They need to sell homes to bring the level down. I see no problems in their collections and their accounts payable to sales appear adequate.

Profit planning

PROFITABILITY RATIOS

Test/Year	1991	1992	1993
Sales Volume	\$863 Mill	\$1078 Mill	\$1203 Mill
Net Profit Margin	2.1%	2.6%	0%
Return on Assets	0.50%	0.95%	0%
Return on Net Worth	8.14%	9.0%	0%

- a) Ryland's sales volume continues to increase
- b) The profit margin is low and the company had a net loss in 1993. The company states this loss was primarily due to the third quarter pretax provision of \$45 million in reserves for homebuilding inventories and investment in unconsolidated joint ventures.

c) Return on assets is the key indicator of profitability for a firm. Companies efficiently using their assets will have a relatively high return while less well-run businesses will be relatively low.

d) Return on net worth is used to analyze the ability of the firm's management to realize an adequate return on the capital invested by the owners.

Conclusion: Ryland has continued to increase its revenues but its net profit margin, returns on sales, assets and net worth as of 1993 shows no return. The company must become more efficient in its operations in addition to increasing sales to turn these numbers around.

### Profit Center Analysis

The following information breaks Ryland's revenue and profits into company segments.

Company Segment Revenue  
(Millions of dollars)

	1991	%	1992	%	1993	%
Home Bldg.	\$859	71	\$1,077	75	\$1,204	82
Financial Services	\$74	6	\$142	10	\$160	11
Limited-purpose subsidiaries	\$277	23	\$223	15	\$110	7
Total Revenue	\$1,210	100	\$1,442	100	\$1,474	100

This chart shows that home-building continues to provide the majority of the revenues to Ryland. It also shows a slight increase of revenue provided by financial services and the continuous decrease of revenues from the Limited-purpose subsidiaries. The company states this decrease of revenue in this segment is due to changes in the tax laws for the sale of its mortgage-backed securities.

Company Segment Pre-tax Earnings  
(Millions of dollars)

	1991	1992	1993
Home Bldg.	\$(3.3)	\$11.0	\$(45.9)
Financial Services	\$26.9	\$43.9	\$55.3
Limited-purpose subsidiaries	\$2.3	\$3.9	\$0.2
Corporate	\$(11.6)	\$(16.5)	\$(14.2)
Total Earnings	\$14.30	\$42.30	\$(4.60)

This chart shows the company financial services continues to be the bread winner of the company. The home building segment had poor performances both in 1991 and 1993. While the limited-purpose subsidiaries contributes to the bottom line less each year. The loss shown for Corporate is the company's Fixed Overhead costs.



## FINANCIAL PLANNING

### Homebuilding Segment

Markets: In Jan. 1994 to address the distinct characteristics of the California market and the opportunities available there, the company elected to form a California Region, comprised of the Los Angeles, Sacramento and San Diego markets.

The company's operations in each of its homebuilding markets differ based on a number of market-specific factors. These factors include regional economic conditions and home growth, land availability and the local land development process, consumer tastes, competition from other builders of new homes and home resale activity. The company considers each of these factors when entering into new markets or determining the extent of the operations in existing markets. In 1993, the company entered into the Austin and San Antonio, Texas markets through its acquisition of an interest in a joint venture with Scott Felder Homes. The company also entered into the Chicago market during the

Land Purchases: The company continuously seeks and acquires land for replacement and expansion of land inventory within its current markets and for expansion into new markets.

Material Costs: To increase purchasing efficiencies, the company uses standardized building materials and products in its homes. In addition, the company operates plants in Maryland, North Carolina, Ohio, and Texas that produce and ship rough lumber packages and trim materials to building sites. The company utilizes these plants to control production, improve on-site building times and control the cost and quality of materials.

Marketing: The company normally commences construction of homes when a customer has selected a lot and model and has received preliminary mortgage approval. However, construction of homes may begin prior to a sale to satisfy market demand for completed homes and to ease construction scheduling.

#### Financial Services Segment

In 1993, the mortgage refinancing boom propelled Ryland Mortgage to its third consecutive year of record profits.

To compensate for the expected decline in refinancing during 1994, the company plans to increase the number of loans originated by expanding spot loan activity and by earning a greater percentage of business from Ryland homebuyers. They plan on accomplishing this through a convenient mortgage process, high level of service and competitive rates. The company introduced the 5-minute Mortgage in 1993. This is pre-approval information available within 5 minutes.

The company is also expanding into new markets, providing opportunity to increase earnings power and market presence.

By building on its expertise in originating mortgages and selling them in the secondary market, Ryland Mortgage has become one of the Nation's leading issuers and administrators of mortgage-backed securities.

Conclusion: Ryland has undergone a year of transition. The company changed management and its strategies in the homebuilding segment. In the third quarter the company made a \$45 million pretax provision for homebuilding inventories.

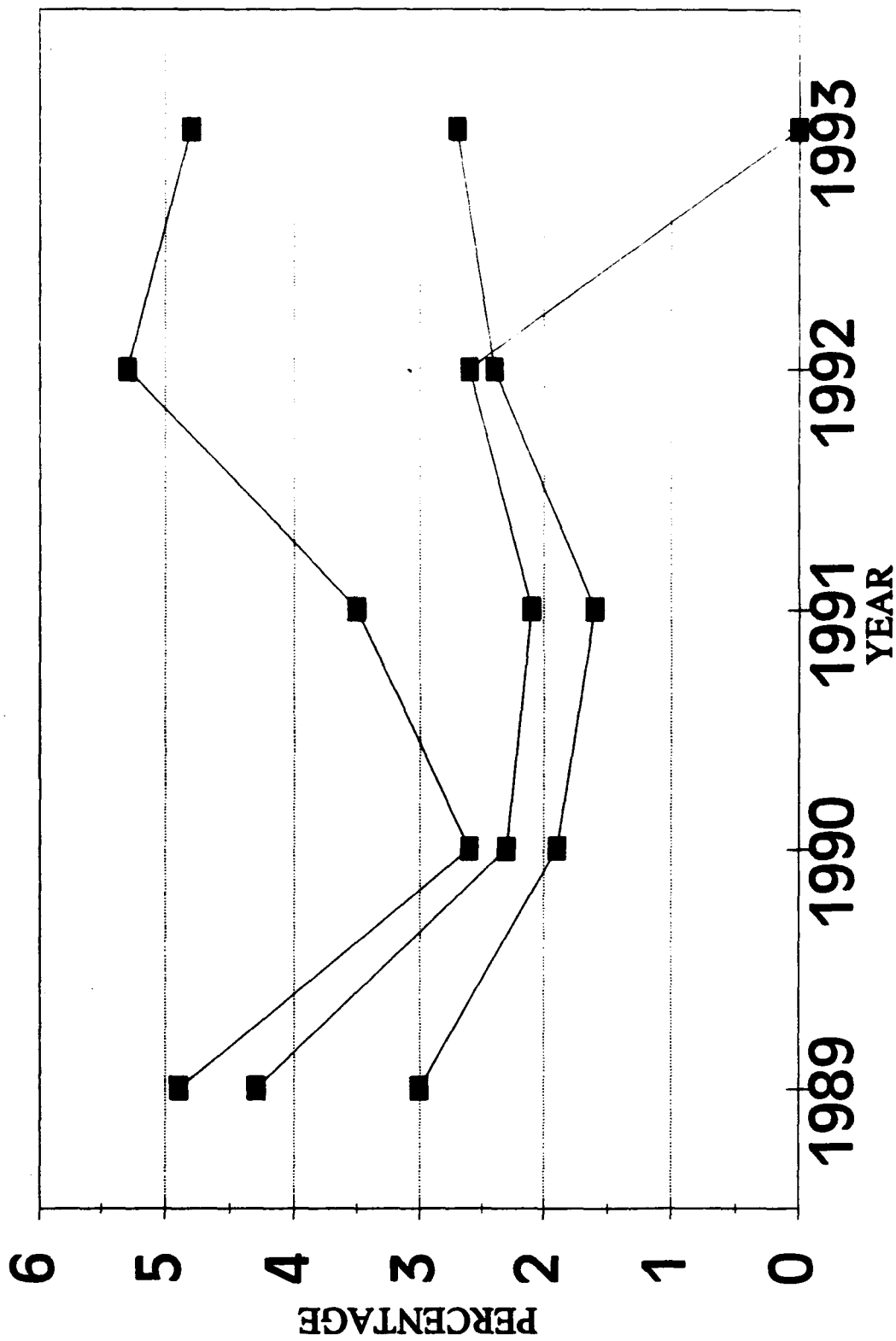
This resulted from a decision to initiate a change in strategy in the California and Mid-Atlantic Regions by accelerating the completion of and withdrawal from higher-end communities negatively impacted by economic conditions experienced during 1993. Although this contributed to the company's net loss in 1993, this final writedown will enable the company at a minimum to breakeven next year.

The company's financial services has been a stellar performer. The expansion of this segment and optimizing within will add additional profits to the company.

With the declining profits provided by the Limited-Purpose subsidiaries, the company should consider dismantling this segment of the company.

The following page shows a comparison of Net Profit Margins of Ryland and two of its competitors. Ryland's \$45 million pretax provision in 1993 is obvious in this graph.

# NET PROFIT MARGIN



■ RYLAND ■ CENTEX ■ PULTE

## 5.2 Morrison Knudson Corporation

Business: Morrison Knudson Corporation operates in two industry segments: engineering and construction, and rail systems. The engineering and construction segment provides design, engineering, construction, procurement, project-management and construction-management services in the infrastructure market, including transportation, water resources, heavy civil and energy developments, as well as industrial, institutional and commercial buildings. The segment also provides skills for the nuclear and fossil-fueled power markets and in cogeneration, waste-to-energy, environmental and hazardous waste, and wastewater treatment fields; and in addition serves the hydroelectric, toxic waste, oil and gas, and mine engineering markets. A number of domestic subsidiaries are engaged in long-term contract mining of coal and lignite at mines in the United States. Other markets include operations and maintenance services for military and commercial facilities.

The rail systems segment is engaged principally in building new and rebuilding used mass transit rail cars in New York, California, Illinois and Buenos Aires, Argentina and rebuilding railroad locomotives at Boise, Idaho,

Pennsylvania and South Australia and, in addition, provides aircraft service and maintenance to private and commercial aircraft at Boise, Idaho.

In addition, the Corporation has equity interests in a U.S. development-stage, high-speed commuter rail company, a gold mining company, Indonesian prestress concrete manufacturing and construction companies, a mining company that operates a surface coal mine in Montana, a company to design, build and operate a toll bridge in Canada and a company that operates and maintains commuter railways in Buenos Aires, Argentina.

### Financial Analysis

Because of MK's large diversification, an acceptable limit on the ratios was not found. However, looking year to year we are able to analyze general trends.

#### LIQUIDITY RATIOS

Test/Year	1991	1992	1993
Acid Test	1.03	0.56	0.47
Current Ratio	1.72	1.12	1.15
Debt/Equity ratio		2.93	3.14
Current Liab/Net Worth	97%	163%	156%

- a) The acid test shows the number of dollars of liquid assets available to cover each dollar of current debt. Anytime this ratio is as much as 1 to 1 the business is said to be in a liquid condition. The larger the ratio the greater the liquidity. As shown above, MK is becoming less liquid each year.
- b) The current ratio measures the degree to which current assets cover current liabilities. The higher the ratio the



more assurance exists that the retirement of current liabilities can be made. As shown MK had a large drop from 1991 to 1992.

c) Debt to equity ratio shows as of 1993 creditors funding is over 3 times that of the owners equity. This may be excessive, especially if the company is burdened with substantial interest charges.

d) The current liabilities to net worth ratio shows a large increase from 1991. The smaller the net worth and the larger the liabilities, the less security for the creditors.

Conclusion: It is obvious from the above ratios that MK is carrying a large portion of debt. With the construction industry being cyclical, an upturn in this industry should have a significant impact on lowering MK's debt commitments.

## Cash Analysis

### EFFICIENCY RATIOS

Test/Yr	1991	1992	1993
Avg age of Accts Receivable	23.4 days	25.6 days	31.0 days
Sales to Inventory	39.3	29.0	20.4
Accounts Payable to Sales	12%	14%	11%

- a) The company's average age of receivables has increased year to year, however it is well within the recommended 45 day period.
- b) The sales to inventory ratio is a guide to the rapidity at which inventory is being moved and the effect on the flow of funds into the business. Inventory control is a prime management objective since poor controls allow inventory to become costly to store, obsolete or insufficient to meet demands. As shown, the ratio has decreased recently indicating addition inventory or slower moving inventory. This may be the result of MK's commitment to purchase its suppliers, expanding its business and the recent recession.
- c) Accounts payable to sales measures how the company is paying its suppliers in relation to the volume being

transacted. An increasing percentage or one larger than the industry norm, indicates the firm may be using suppliers to help finance operations. As shown MK has improved in this area bringing the ratio down to 11%.

Conclusion: MK is collecting from its customers in a timely manner. Inventory turnover has increased, however this may be due to expansion within and the economic recession. The company has also improved on its payments to creditors. I believe MK is doing the right things to efficiently use its cash.

#### Profit planning

#### PROFITABILITY RATIOS

Test/Year	1991	1992	1993
Sales Volume	\$1,980 Mill	\$2,285 Mill	\$2,723 Mill
Net Profit Margin	1.6%	0.6%	1.0%
Return on Assets	2.93%	1.38%	3.70%
Return on Net Worth	8.0%	3.57%	6.95%

- a) MK's sales volume continues to increase
- b) The profit margin is low and took a dip in 1992. It

picked up in 1993 and should continue to improve as the economy recovers. Net Profit Margin reveals the profits earned per dollar of sales and therefore measures the efficiency of the operation. This ratio is an indicator of the firm's ability to withstand adverse conditions such as falling prices , rising costs and declining sales.

c) Return on assets is the key indicator of profitability for a firm. Companies efficiently using their assets will have a relatively high return while less well-run businesses will be relatively low.

d) Return on net worth is used to analyze the ability of the firm's management to realize an adequate return on the capital invested by the owners.

Conclusion: MK has continued to increase its revenues but its net profit margin, returns on sales, assets and net worth have not performed that well. 1993 showed a nice improvement for these ratios from the previous year and this should continue as the economy recovers.

### Profit Center Analysis

The following information breaks MK's revenue into industry segments and geographical areas.

#### Industry Segment Revenue (Millions of dollars)

	1991	%	1992	%	1993	%
Eng/constr	\$1,555	77	\$1,986	87	\$2,298	84
Rail System	\$470	23	\$299	13	\$425	16
Total Revenue	\$2,025	100	\$2,285	100	\$2,723	100

This chart shows that Engineering and construction continues to provide the majority of the revenues to MK. It also shows a slow down in the amount of revenues the rail systems is providing the company as a whole.

#### Geographic Area Revenue (Millions of dollars)

	1991	%	1992	%	1993	%
U.S.	\$1,967	97	\$2,089	91	\$2,122	78
Asia/Pacific	\$15	1	\$50	2.5	\$342	13
Other International	\$43	2	\$145	6.5	\$258	9
Total Revenue	\$2,025	100	\$2,285	100	\$2,723	100

This chart shows the company is expanding quite rapidly in the Asia/Pacific and Other International markets.

## Financial planning

### Transportation Manufacturing Division

The company expanded its scope as an original equipment manufacturer of rolling stock and experienced dramatic success in the operations and maintenance market that has resulted from privatization of transit and freight systems in several countries.

The company also continued to enlarge its network of components suppliers by acquiring leading manufacturing firms. This "vertical integration" enhances MK's manufacturing operations and provides a large aftermarket parts business.

MK is committed to high-speed rail as an integral part of the transportation system in the United States and abroad. The company is working with FiatFerroviaria, of Italy, to market Fiat's advanced "tilt train" technology in North America.

The company continues to expand its capabilities to renovate and produce new transit-cars for the California DOT and commuter lines serving northeastern Illinois. It also continues to receive new contracts to renovate locomotives in the U.S. and abroad.

### Transportation Infrastructure Division

MK's strategy in the international market for transportation infrastructure projects is to apply project-management skills on large, complex projects and provide complete services, from design through operation.

This concept resulted in an historic milestone for the company with a contract award to MK and three joint-venture partners to design, build and operate an eight-mile long bridge linking the provinces of New Brunswick and Prince Edward Island in eastern Canada. Working in partnership with the Canadian government, MK implemented creative project financing methods to make the \$600 million project possible.

MK is also scheduled to begin work on a similar public/private funded project in 1994- the \$300 million E-470 Beltway in Denver, a 48 mile long toll road that will be designed, built and operated by MK.

MK has emerged as the preeminent U.S. firm in the development of high-speed rail. In the U.S., the government has identified several incremental high-speed rail corridors, and MK is prepared to package engineering, construction, vehicle-supply and operations services.

### Environmental Division

The company created a new division that brought together their technical and scientific skills in the environmental market to serve both private and governmental clients in the U.S. and abroad. This approach won MK contracts at two Superfund sites and several military installations.

### Industrial Process Division

MK's design-build services approach is continued diversification, an expanding client base and the ability to target large, unique projects.

### Power Division

MK and two associates acquired a major interest in MIBRAG, a state owned mining, reclamation and power generation company that holds some of the largest coal mining operations in the former East Germany. This acquisition will triple coal production for the company's Mining Group that also operates coal and lignite mines in the U.S.



Conclusion: MK is in the process of decentralizing its corporate structure. This will make the company more efficient both operationally and financially.

The company continues to forge new business alliances where each party adds the capital, talent, technology or knowledge of the culture necessary to succeed. This is most important in foreign markets where different business cultures exist.

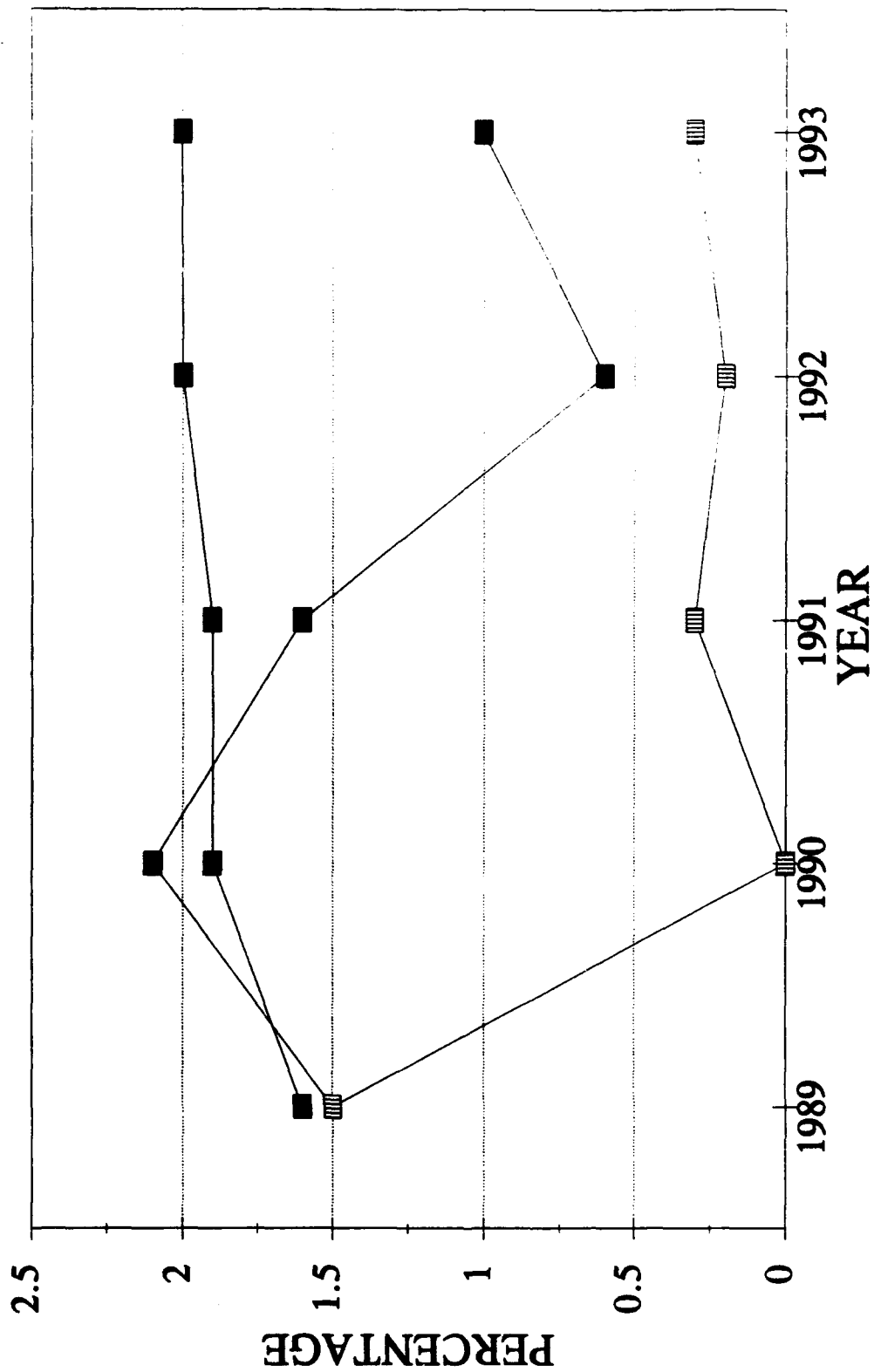
The company's alliances also include public/private partnerships-joint ventures that have dramatically demonstrated MK's strength in the emerging market for design-build infrastructure projects.

Finally, the company continues its drive toward international leadership in the rail transportation market with acquisitions of dynamic companies, and expansion from within. This along with its vertical integration catapulted MK to the forefront of the locomotive parts and distribution market.

With the expansion of its rail systems and the increased infrastructure spending throughout the U.S., MK's future looks bright.

The following page is a graphical comparison of Net Profit Margins of MK and two of its competitors. As shown, the profit margins are very slim in the construction industry.

# NET PROFIT MARGIN



■ MK ■ Fluor ■ Perini

## References

1. Jackson, Ira J. and M.H. Gilliam, Financial Management for Contractors, McGraw-Hill Book Company, New York, 1981.
2. Schmiederer, John M. and C. Coulter, Contractor Financial Management, 1983.
3. Coulter, Carleton and Kelley, C.A., Contractor Financial Management and Construction Productivity Improvement, 1992.
4. Miles, Derek, Financial Planning for the Small Building Contractor, Intermediate Technology Publication, Ltd., London, UK, 1979.
5. Value Line, Jan. 21, 1994, pp 866-881.
6. Standard & Poor's, March 1, 1994, pp. 1552 and 1957.
7. Moody's, spring 1994.
8. Annual Report, Ryland Group Inc., 1993.
9. Annual Report, Morrison Knudson, 1993.